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Comment on the neotypification of protists, especially ciliates (Protozoa, Ciliophora)
(General Article, see BZN **59**: 165–169; **60**: 48–49, 143, 216–217; **61**: 39–40)

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The usefulness of neotypes in modern protistan systematics is not in dispute and we also applaud the principle of redescribing existing taxa, rather than creating new names that so often add to nomenclatural confusion. Nonetheless, we argue that Foissner's proposal is rather more liberal than is desirable.

First, although protistologists often talk about the ciliates and other protists as being ubiquitous (Finlay, 2002), there remains reasonable doubt that it is really and universally so. The crux of the argument depends on how the species are defined. Many morphospecies are demonstrably cosmopolitan, but there are several examples of species not having yet been found outside a particular geographical region. Certain species of the ciliate *Blepharisma* (*B. japonicum*, *B. stoltei* and *B. brevifiliformis*) have never been found in the Americas (Giese, 1973). The sibling species of *Tetrahymena* are biochemically, and therefore genetically, distinct despite being extraordinarily difficult to distinguish morphologically (Gates & Berger, 1976). Restricted geographical distributions have also been assigned to several other taxa of ciliates and testate amoebae (Foissner, 1999, 2003; Foissner & Song, 2002; Foissner et al., 2002).

The purpose of neotypification is to fix the nomenclatural type of a given taxon when no holotype, syntypes, hapantotypes or lectotype exists. In so doing neotypification inevitably defines the taxon's range of morphological variability, normally by restricting it to a greater or lesser degree. To permit the designation of a neotype from material originating in a continent other than that of the original place of collection might lead to its being challenged at a later stage, on the grounds that material from nearer to the type locality was excluded from the newly defined circumscription. This would not aid the Code's fundamental requirement of achieving nomenclatural stability.

The tradition of designating type specimens in protistology is not strong. Although there exist original collections of slides containing specimens of taxa described and illustrated in key taxonomic works, only rarely were these slides formally designated as types by the authors describing the taxa in question: a striking example is the Penard collection at the Natural History Museum, London, (see http://internt.nhm.ac.uk/cgi-bin/perth/protists/) where individual specimens can be clearly matched with the diagrams in Penard's major work (Penard, 1922). The Natural History Museum holdings also contain the bequest material of many taxonomically active protistologists and could contain original slides which, although not designated as holotypes, hapantotypes or syntypes by the authors, represent an

obvious source of material from which lectotypes ought to be selected and designated. Such instances could make neotypification superfluous in the best of cases, and damaging in the worst. It may also be possible to re-examine original material of a taxon using methods which were not available at the time of the original description, thus making lectotypification of original collection material not only possible but also much more meaningful within a modern taxonomic context (Novarino & Coute, 2000). So far such cases are rare but they may be more widespread than is commonly believed. In essence, we feel that a thorough check should be made for existing material before new material is designated as neotype. The difficulty of locating slides in private collections is not an acceptable argument for the creation of a neotype any more than it would be acceptable to ignore taxonomic work in hard-to-locate publications.

The protistological practice of regarding original published illustrations as an acceptable kind of nomenclatural type should remain, since it has served us well. The practice of redescribing taxa from the old literature to modern standards delivers almost all the benefits of nomenclatural stability. The designation of a neotype brings extra benefit by automatically restricting the circumscription of the taxon, but it carries the risk that the specimens may not clearly show those characters which define the taxon. For instance, some ciliate species would need a silver stain preparation, others nuclear staining, etc. Unfortunately, unlike most biological material, protists cannot be handled easily and that is why little type material exists. We are concerned by the possibility that hasty neotypification might bring more confusion than clarity, especially if the neotypes were not taken from the same geographical region as the original specimens, which would provide ideal grounds for later challenge. Much the same purpose could be achieved by depositing voucher specimens to accompany a taxonomic redescription, which makes material available for later study but reduces the risk of confusion by later studies challenging the neotype status of specimens not taken from the type locality.

We therefore oppose the phylum-wide derogation of Article 75.3.6 of the Code. Like Corliss (2003) we support the flexible application of the expression 'as nearly as practicable' which can take into account known distribution patterns and potential mechanisms for dispersal. For instance, species that form true cysts, such as *Colpoda*, are more readily dispersed over large distances by the wind or other mechanisms and are less likely to be geographically constrained. The issue of isolation is important: protists in the Namib desert have been isolated for more than 50 million years (Foissner et al., 2002) and it would require truly remarkable genetic properties for these taxa not to have differentiated in this time. Alternatively, there could be extremely strong morphological constraints operating on these taxa, or else the taxa have not, in fact, been isolated at all.

Two issues would advance protistan systematics significantly more than the widespread designation of neotypes. First, a journal of record should be designated so that the search for taxonomic acts can be greatly facilitated. Valuable as *Zoological Record* undoubtedly is, its coverage is not universal. It is our fervent hope that the next edition of the Code will support a journal of record (Thorne, 2003). Second, the deposition of molecular sequence data to accompany the actual specimens and/or illustrations on which newly described protistan taxa have been based. It is beyond doubt that molecular tools are reshaping the way we study

all aspects of the biology of protists. There is an urgent need to provide a taxonomically sound database of molecular sequences to bring the advantages realised in prokaryotic systematics to the protistan realm. It is, in our view, highly desirable that this takes place in parallel with the deposition of voucher specimens for morphological studies.

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Comment on the proposed precedence of *Bolboceras* Kirby, 1819 (July) (Insecta, Coleoptera) over *Odonteus* Saɱouelle, 1819 (June)

(Case 3097; see BZN **59**: 246–248, 280–281; **60**: 303–311; **61**: 43–45, 110–114, 171–173)

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The case caused unusual excitement among nomenclaturally minded coleopterists. We believe that probably everything relevant has already been written, and all the errors and misleading statements contained in the original application by Jameson & Howden (BZN **59**: 246–248) have been amended, particularly by Krell et al. (BZN **60**: 303–311) and Smetana (BZN **61**: 171–173).

We feel unhappy that a nomenclatural problem, which could have been solved by direct application of the Articles of the Code, developed into a kind of unnecessary transatlantic battle. It was clear from the beginning that either the Nearticians (should *Odonteus* be accepted as valid) or Palaearcticians (should the proposed